

No. 277

Some British Wild Animals

From 'Habits and Characters of British Wild Animals'

BY

H. MORTIMER BATTEN

Author of 'Tracks and Tracking,'
'Romances of the Wild,' &c.

Book I.

THE BROWN HARE

THE BLUE OR MOUNTAIN HARE

THE RABBIT THE SQUIRREL

WITH THE COMPLIMENTS OF
W. & R. CHAMBERS. 9d.

LONDON: 38 Soho Square, W.1

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In Four Books. Price 9d. each, limp cloth.

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THE BROWN HARE.

ONE of the marvels of wild nature is that the hare survives—not only survives, but, if given any chance whatever, thrives and multiplies. It is one of the few wild-folk to whom nature has given no secure sanctuary. The common prey of all, pursued first by one, then by another, only its marvellous speed and its superb staying-power enable the hare to hold its own against so many foes. The foxes and the rabbits have their burrows, but the hare has no such shelter; he meets his foes on their own ground, and beats them at their own game. He is a superb running-machine, wise in the wisdom of the trails, and withal a joy to behold. Away he goes—starting from a tuft at our feet, floating, gliding, over the pasture, light as a thistle-seed, keeping always to the hollows, seldom showing himself on the skyline. And what lover of the great outdoors has never felt the desire to follow on in wild pursuit?

Truly he is the common sport of all, this creature which is always game to the end—living a life of hair-breadth escapes till he can hold out no longer against his foes. Particularly is this so when the snow is on the ground; for it is not the hard, swift run that kills the hare; it is the slow ‘tramp, tramp, tramp’ of a dogged pursuer on his trail. In times of snow the shepherd and the farm-man know that the hare is at their mercy, and taking down the old gun from its shelf, the hunter sallies forth. Here is the quarry’s over-night trail; there is nothing to be done but follow that

chain of tracks to the winter form, which is found in a sheltered hollow of the pasture, facing south. The man stops short in readiness ten paces away. The tracks lead to that tuft, but beyond the tuft the story of Jack's life, written in the world's oldest writing, ceases abruptly. Stooping, the man picks up a twig, and throws it at the tuft; then away goes the hare, ears laid back, eyes watching behind, eager to place some obstacle between himself and his pursuer. There is a loud report, a squeal, and the hare zigzags; another report, and silence. There, tinting the snow with his life's blood, lies the hero of many a fiery run, who owes his fate, like so many of his kindred, to the tell-tale writing of the snows!

One glorious winter day, when there was a light tracking snow on the ground, I saw a run which opened my eyes as regards the staying-powers of the hare. I was high up in the hills, commanding an incomparable view of the wide valley, and had with me a hound which was both fast and powerful. Putting up a hare, the dog set off in pursuit, pressing the animal hard down the mountain-side; for, owing to its long hind-legs, a hare is not at its best when running downhill, and has often been known to fall badly. Once in the valley, a mile away, the hare began a wide circuit, over field after field, round the village, over the pine ridge, and across the burn, the dog, with lagging steps, following by scent now. Yet another circuit of the Boulder Hill, adding three more miles, much of the pursuit hidden from our view; then we saw the hare again on our side of the hill—saw him pause and listen, deliberately tying knots in his trail. Finally he sought the cover of the frozen swamp, and after



WARWICK
REYNOLDS

THE BROWN HARE—'AWAY!'

some minutes the dog reappeared, tongue lolling, almost at a walk. Skilfully, yet laboriously, he unravelled the tangle of tracks, headed for the swamp, and again put up the hare.

Numbers of people who had seen or heard of the chase now began to appear at gates or on the hill-tops to watch the sport, and the hare once more set off, now with weary steps, but nevertheless leaving the hound. Behind a gate a labourer was waiting for him with one of the fastest, best-winded sheep-dogs in the country, and the poor exhausted hare ran right into them.

Was he exhausted? Be that as it may, he instantly doubled his speed, breasting the steep mountain-side at one long, floating glide. Up went the little spurts of powdery snow from his heels, and between him and the fresh dog the white expanse of snow rapidly grew in width. Up the mountain-side he came, passing quite near, and behind him that great iron-limbed hound. Down into the valley once more, round the village, over the burn, then westward through the foothills—hard pressed now. Through Bethman's farmyard, scattering the hens; and then—Bethman's dog was after him, the third fresh dog, running hard and fast, and gaining, gaining, gaining!

At a gate a woman turned the hare—through the churchyard then, and along the road, down the steep bank to the river, here ninety yards in width and thundering between the rocks. We watched long for him to emerge on the other side; but no. We saw Bethman's dog, dripping wet, come back; and just then my old dog, still patiently following the trail at about three miles an hour, came plodding towards us, imagining he had done marvellously.

‘That hare is drowned!’ we all agreed, and went our respective ways.

But just on the edge of dusk, as I was descending the mountain-side, I saw a very tired and bedraggled hare wending his way towards me. Constantly he paused and listened; then, making off by the old familiar runs, he departed into the gloom, heading for the mountain heights.

Did I recognise him? I can’t swear to that; but I know there was only one hare on that part of the mountain-side, and I know the hare I saw, returning wearily home at dusk, followed the private runway of the creature we had pursued.

How far will a hare run before dogs? Some say eight miles at the most. Personally, I think eighteen a fully conservative estimate. Before a pack of hounds he will not run far, because his spirit is broken by fear; before a single dog no faster than himself he is capable of putting up a very different show.

HABITS WHEN PURSUED.

Each hare has its own runways—or, rather, passes to and from its feeding-grounds by the same routes. Normally it will never go through or over a wall if there is a gateway through which it can pass, and it is to be feared that this partiality towards open going often proves the hare’s undoing. The poacher knows it well, and has nothing to do but place his net across the gate-gap, and then drive the hare into it, using his snares in the same way. But occasionally an old hare knows these things, and once having been frightened, he never faces a gate again.

The hare is one of the few animals that can see behind it as it runs, and it is owing to this

faculty that the animal is so well able to dodge hounds at close quarters, doubling and twisting in the ace of time, and thus tiring and disheartening its pursuers when every one thinks the run is at an end. So absorbed does the hare often become in looking behind that it forgets to calculate for danger ahead; and many a hare, pursued by dogs, has been known to run into the legs of spectators, never seeing them, so intent was its backward gaze.

Most motorists have indulged in a short, if unsuccessful, pursuit of a hare, the animal sticking to the open roadway ahead of the car, watching the vehicle as he runs, never thinking of turning aside till the car is actually on him. Pursuing a hare thus, I have timed it by speedometer to maintain a pace of twenty-eight miles per hour over a short distance, which seems about the animal's limit.

One wet night I was motoring near Birmingham, when a hare got up in front of the car, and positively refused to get off the road, setting the pace for over two miles. During the run we noticed that the lamps were getting dim, and it appeared as if we were passing through a heavy shower. Finally the hare dodged off, and descending, we discovered that the dimming of the lamps was due to the mud thrown up on the lenses by the hare's hind-legs! The whole front of the car was literally drenched in dripping mud, the wind-screen was opaque, while we ourselves were splashed about the face. One would never have believed so small an animal was capable of displacing so much liquid in so short a space of time.

The hind-legs of a hare are most abnormally developed, for, like those of the kangaroo, they

are the animal's propelling-members. Often the creature's life is dependent upon a sudden, lightning spurt—shooting off into space to foil the first dash of Reynard, who has discovered it in its form, and knows well that if once the hare gets on its legs the game is up. A hare has even been known to break one of its legs in shooting off the mark, the bone proving insufficiently strong for the sudden strain thrown upon it. The fore-legs are comparatively feeble, functioning more or less as pivots over which the creature bounds, and it is because the forelegs are inadequate for the strain thrown upon them by the gigantic bounds that a hare is so much at a disadvantage in going downhill. If by any accident one of the hind-legs becomes injured, the cripple will most assuredly disappear, for, robbed of its powers of flight, it can no longer hold out against its many foes. The first fox it meets knows instantly that 'there is something wrong with that hare;' and Reynard soon succeeds in profiting by the poor creature's disablement.

LIMITATIONS.

A good hare will run any ordinary dog to a standstill, with miles of energy to spare; but though one of the most marvellous running-machines in creation, he is, nevertheless, a creature of mortal limits. Pursued by beagles, bounding ahead of them mile after mile, and keeping them on the distant skyline, in the end he mounts a wall as a point of observation, and hounds and huntsmen, coming up, find him crouching there, still watching his back trail! But it is a limp and lifeless form the huntsman tosses to the hounds; for here, again, the old old tricks are

set at naught, the marvellous uphill sweep has failed to leave his pursuers behind, and he has died as he has lived—watching his back trail. Looking behind! That is why he holds the roadway ahead of the motorist; that is why he often falls when descending a mountain-side at speed; and be his last effort the act of climbing to a point of observation, or launching himself into space in a final supreme effort to outstrip his pursuers, he is always looking behind.

No creature has so many foes, no creature is so widely coveted. Snares, nets, dogs, guns—these are but a few of the perils that beset him every hour of his life; yet he has survived, while so many wild-folks that once shared his habitat have quietly laid down their arms and retired from the field.

DISPOSITION.

In disposition hares are the most solitary of all four-footed, warm-blooded things. They never associate except for the brief period of the honeymoon, and there is no real family life. Something of the solitude of their disposition begins to show immediately after birth, when very often the youngsters separate, and each makes for itself a solitary form, uniting only when the mother calls them at meal-times. If two hares be started side by side, they invariably run in different directions, the only exception to this rule I have come across being that subsequently recorded of two Jacks running together to engage in combat. If a honeymooning couple be flushed together, they separate immediately, to reunite later on, guided as to each other's direction by their sense of smell. The scent-glands are highly developed, purely for

the purpose of enabling a hare to find its mate. Were these glands less fully developed, the animals would never find each other in districts where hares are few and far between. I have never known of these creatures uniting in any way purely for social amusement, though such a thing does not seem to be unheard of regarding certain northern varieties.

NATURAL AND ACQUIRED ENEMIES.

A wild animal has two kinds of foes—hereditary, and those which are brought about by a change in the conditions under which it lives. The former it contends with guided by inherent knowledge, which is instinct; the latter it learns to circumvent only by experience. The hereditary foes of the wild hare are the fox, the weasel, the hound, even man himself. Against each of these the hare has its means of defence. A young hare that has lived its life in perfect immunity instinctively dodges through a narrow opening to baffle a pursuing hound, and as instinctively doubles back and leaps aside when going to its form in order to delay a pursuing stoat. All these tricks, clever in their way, are the outcome of endless decades of experience; they are, indeed, inherited habit. A young hare obtains little or no education from its mother. The fox-cub or the otter-kit is taught by its parents, lesson by lesson, the things on which its later life depends; but this does not apply in the case of the hare. The leverets leave the dam when about a fortnight old, and each day thereafter they become less and less dependent upon her. Her duty in life is merely to suckle them; and as they become independent of her for support, the family bond is split asunder, and leveret and mother live

their lives apart. Not one single lesson as regards the circumventing of their numerous foes is taught the young hares by their mother, yet they grow up to hold their place among the wiliest of all four-footed things.

Among the comparatively modern enemies of the hare, regarding which it must learn by experience, are the hempen-net, the snare, and the net set across the open gateway. If hares, like foxes and deer, possessed among their gifts the ability to hand on their experience to their children, then these modern engines of man would be set at naught by their cunning. A hare lives to grow wise; by chance rather than sound judgment it has evaded death time and again ere, in its old age, the wisdom of experience is added to its inherited knowledge. But the children of that hare profit in no way by its learning. They are as unsophisticated as regards the modern engines of mankind as are the first brood of a dam who has lived in perfect security. This is yet another factor that makes it difficult to understand the hare's powers of survival. It is surrounded by foes; anything that can catch a hare can kill it; it is prone to all the ills and ailments of mortal flesh—barring, perhaps, kleptomania and orator's throat; the knowledge of the parents is denied the children—they have no friends or guardians, save the strength and agility of their own hind-legs and their own powers of multiplying. Truly the hare is among the marvels of modern existence.

My sympathies are all with the village poacher, though hating the petty meannesses and unmanly vengeance peculiar to the class. The hare is a glorious creature of the chase, to be coveted not so much for its value as so much meat, but for the

joy of having outwitted a wary quarry. The hare-poacher, whatever he may be as we see him to-day, the product of rough beds and tap-rooms, must at some time of his life have possessed a very real love for the great outdoors, backed by a sense of romance concerning the life that dwells therein. Meagre results, irregular hours, a temperament which shuns the prescribed pathways of life for an existence of freedom and excitement, have reduced him to what he is as viewed by the world at large; but beneath the rough exterior there often dwells a spirit of kindly and sympathetic understanding. He might, indeed, have been a poet, had not society designed for him the fate of the moucher.

Concerning the hare's modern foes, it is interesting to note that in bush countries, such as northern Canada, man is not among the hare's natural foes. I have sat by a camp-fire in the Ontario bush, and seen a 'snowshoe rabbit' hop to within reach of my axe, and sit there calmly grooming itself. Yet these same hares, which simply did not recognise man as an enemy till they had learnt by sad experience his true nature, would bolt from a dog, and put up as fine a run for their lives as any creature of their size in this country. It was merely that the dog came within the scope of their hereditary foes, while of man they possessed no inherited dread.

Will the hare come in time to eschew the open gateway or the gap in the boundary wall? Will the hempen-net and the drift-net and the snare some day rank among this animal's hereditary foes? Not in our time, nor in the days of our grandchildren's grandchildren. Such knowledge takes as long to acquire as the growth of new teeth to suit changed conditions of diet, or the cultivation of

a new coat to suit a landscape which has changed in colour. It is not a matter of ten years, or yet of ten hundred, but of unchanged conditions throughout immeasurable time, that produces inherited knowledge.

The wolf and the coyote have learnt the meaning of strychnine and of the buried trap, and how to evade them. They have changed with the times; they have become modernised, and thus have managed to hold their own. But in their case the experience of the parents is handed on to the children; only thus have they survived, and the hare is denied the privilege which comes to them as a birthright. He is a creature of the open, trusting solely to his superb powers of flight to evade his foes. Denied the benefit of the experience of his parents, he will make for the open so long as he is pursued, and will fall to the poacher at the gap or the gateway at which his mother and his mother's mother fell.

A good many hares are killed on the railway-lines, and a railway workman employed in Norfolk told me that in the early summer, when the young hares of the season are first abroad, he procured many a Sunday dinner in the shape of a partly mangled hare found on the line. Evidently they run in front of the train just as they run ahead of an automobile on the road, sticking to the open way instead of turning aside and so out of danger. An old hare, however, is seldom killed thus, just as an old partridge is seldom killed by flying into the telegraph-wires.

MATING.

March is the hare's love-making season; hence the saying, 'Mad as a March hare!' Hares are

truly mad in March, and during that month many a stern battle takes place between the gentlemen who, unfortunately, fall in love with the same lady, which appears to be the common order of things. Neither are the contests worked out on Marquis of Queensberry rules, the chief ambition of every gentleman hare in March being to kick every other gentleman hare into insensibility. The one who can jump highest and kick hardest wins the fair lady, and it is a laughable sight to see two hares indulging in one of these sky-hopping contests. Taking a run at each other, they collide in mid-air, striking furiously, each trying to kick the other over the wall and into the next field. I have seen two hares, startled by a common foe, make off side by side, and simultaneously take one of these running jumps at each other ere going fifty yards, to come to earth and repeat the performance time and again till finally out of sight. Also, a male hare, on seeing a rival, will stand straight up on his hind-legs, appearing of enormous size, and utter such a scream of rage that the other hare will bolt rather than remain to fight this veritable elephant among hares!

THE YOUNG.

The Mad Moon lasts generally into the second week of April,* and at about this time the first leverets of the season come into the world. There are at least three families during the season, the latest about September. Curiously enough,

* In Scotland and in the Pennines hares may be seen in pairs, or even in groups, during the dusk of the evening, till well on in the month of May, or even later in very high country. Much depends on the weather conditions.—H. M. B.

the young are born with their eyes open. Though able to run about almost at once, they remain in the form till they are about a fortnight old. Two or three at a birth is the usual number. During the periods of abnormal increase in their numbers, to which subsequent reference is made, five or even six may be born, but the number always returns to the original two or three. The young are mature at one year, and the first two years of a hare's life are the most critical. If it survives these, it is well on the way to becoming a wise hare, which is the only hare that lives till the decline of its powers heralds its going.

As soon as the young are old enough to leave the nest they are able to dispense with the services of their mother. Each day thereafter they become more and more independent of her, living their lives apart, and never being seen in company with her save under exceptional circumstances, as, for example, when her presence is necessary as a protector. It is seldom that the young are seen following the mother, except, perhaps, during abnormally dry seasons, when water becomes necessary to their existence; then, occasionally, the young may be seen accompanying the dam down to the drinking-place. She will, however, fight on their behalf till she becomes occupied with a second brood, and the squeal of one of her leverets brings her instantly to the place, prepared to do battle with cat or stoat as the occasion may demand.

In passing to and from the form in which her young are hidden, a mother-hare exercises the utmost care to break the line of tell-tale scent she leaves. This she does by back-tracking a certain distance, so as to leave a dead end in her trail;

then she takes a terrific leap to one side or the other, and repeats the performance. I knew one hare whose leverets were hidden at the edge of a swamp, and in coming and going she always threaded a tortuous course through this swamp, jumping and back-tracking many times, and seeking out the wettest patches, where the scent would not lie.

I have heard of a hare leaping on to a hedgerow, then off again at a tangent, in order to break the line; and I have watched one leap into a swamp that lay out of its direct pathway when going down to its feeding-grounds—the diversion being made, apparently, for the sole purpose of breaking the line.

INTELLIGENCE.

Just where does the hare stand in the scale of animal intelligence? Higher than the rabbit, yet a long way below the deer and the otter. It has not even advanced to the first stage of civilisation by keeping its home clean and sanitary, and in this may lie the secret of the fearful epidemics which occasionally devastate the whole hare population of certain areas.

But the hare profits by previous experience, and in this lies the beginning of wisdom. A mother-rabbit blunders into the same mistakes season by season, and her young are taken from her by the same harsh fate; but a hare seldom blunders twice into the same mistake. ‘Once bitten, twice shy,’ is the axiom of her existence. The whole trouble lies in the fact that the young do not profit by the experience of their elders. Each has its own way to make and its own experience to gain. Were this not so, the hare would

assuredly be among the fittest of the land, for to its natural gifts would be added the ability to adapt itself to changed conditions, and thus to become modernised, as have the deer, the otter, and the fox.

DISEASES.

But it is as well the knowledge gained by experience is not transmitted, or nature would fall back upon disease to make up what was lost by the baffling of the hare's foes. In this country the hare population is reasonably free from disease, owing to the fact that they are never over-plentiful; but in other countries the number of hares periodically becomes so enormous that they literally overrun the land. In certain parts of Canada, for instance, hare plagues occur regularly. In two or three seasons their numbers increase from a moderate sprinkling to tens of hundreds per square mile. It becomes impossible for man to cope with their numbers, for thousands may be killed without making any appreciable difference. One can stand in a clearing of the forest and count literally dozens of hares without moving one's standpoint. Seton estimates their numbers at such times as five thousand to the square mile, allowing one mile in two as not suited to the hare's tastes, and, therefore, being unoccupied by them, which means ten thousand to the square mile of suitable grazing.

Such plagues do not last long—a few months at the most sees them through; for disease, every disease under the sun, soon becomes rife, and in a season or two not a hare is left. It takes not only the weak, but also the strong; it clears the whole

country of its hare population, and the dead bodies of the victims are littered like leaves over hundreds of miles of territory.

HABITS IN SNOW.

The 'long valley' hare,* like the rabbit, is subject to fits of torpor during periods of deep snow and cold. Seeking out its form, it allows itself to become snowed in, and there remains, perhaps, for several days in a more or less torpid condition. This is about the wisest thing it could do under the circumstances, for a hare in deep snow is deprived of its only weapon of self-defence—its speed—and is, therefore, at the mercy of its foes—man included. Its enemies, moreover, realise its helplessness at such times, and are quick to profit by the fact. One cannot imagine a kestrel being guilty of attacking a hare in normal times, but this small hawk will readily do so when the hare is at a disadvantage in the snow. One snowy morning I was walking down a hedgerow in Northamptonshire, when I heard a hare screaming in a thicket ahead. Going up to the place and beating the hedge, I was surprised to see a hare make off from one side and a small kestrel from the other. Evidently the hawk had attacked the hare out in the open, but, unable to hold it, had been dragged into the hedge.

I once shot a merlin which was seated, as I thought, on the snow. Going up to it, I found the little bird had just killed a white mountain-hare, which was several times larger than itself.

Thus the hare's possible enemies in normal times become probable enemies in snow times, and wise

* A hare living in the long, wide valley of the lower course of a river.

is the hare that during such season hides deep under the drifts.

SWIMMING.

Few people, perhaps, have seen a hare deliberately take to the water, for this animal is no more partial to such an element than is the cat; yet a hare, hard pressed, will enter water and swim for its life as readily as any other creature.

When fishing in the Galloway highlands, a friend and I noticed a hare browsing on a point of land jutting far out into the loch, so we promptly cut off the only possible land retreat and began to approach the animal. Speculation was rife as to whether it would take to the water, or whether it would try to dodge between us, which it could easily have done without passing dangerously near. Finding itself in difficulties, the hare ran backwards and forwards once or twice in search of a dry way of escape, but discovering itself marooned, it jumped unhesitatingly into the loch, and struck out manfully for the nearest point, fully ninety yards away. Its action in the water was truly ludicrous, for it swam in a series of bounds, propelled evidently by the hind-legs. At first each stroke raised it head and shoulders out of the water; then it would sink back till almost totally submerged; but as the distance increased the strokes became feebler and more erratic, till we feared the poor beast would drown. It just succeeded in getting across, however, but had the water been really cold it would probably have perished.

I have at other times seen hares swim short distances, but from the exhibition just described,

I should put this animal down as a very feeble swimmer.

SECRET OF SURVIVAL.

Wherein lies the secret of the hare's survival? In the number of its offspring. It survives simply because it is better able to stand the huge drainage on its numbers than the creatures that once shared its environment, but are now gone. In some districts its numbers have dwindled to the merest few, and were it nowhere preserved its extermination would be a matter of ten years at the most. Over vast areas of country the hares are totally exterminated by the end of winter; but during spring and summer, when the warfare against them abates a little, other hares creep in from the sanctuaries farther afield, and make good the shortage. Our old English and Scottish estates are responsible for keeping the hare alive; and were they to go, the hare would most assuredly go with them, and we should lose a creature that is not only inoffensive to man, but is a joy to behold—truly a child of the wild March winds and of the great open places.

SPECIES.

Ireland rejoices in a species of hare—among other things—quite its own. The Irish hare has been introduced to Great Britain, and the British hare to Ireland.

LENGTH OF LIFE.

I have no notes on the length of life of captive hares, but there is no doubt that if both were in captivity the hare would in all probability outlive the rabbit by two or three years. In the wild this

does not apply, for, whereas a wild rabbit may live to become old and decrepit, a hare never does. As soon as its senses begin to lose their keenness, it inevitably falls a victim to one or other of its foes. A rabbit can seek the shelter of mother-earth, and becoming conscious of its enfeebled state, it ceases to wander far afield, remaining always near to some place of sanctuary. Not so the hare. When old age comes upon him, he must still sally forth into the open, meeting his foes on their own ground; and the day of his first and last failure inevitably dawns with the falling off of his powers.

The average hare is well past its prime at nine; it is old at ten; and few, if any, live to see twelve.

WEIGHT.

The mean weight of the brown hare is between 7 and 9 lb. A 9-lb. hare is a good one; and 11-lb. hares are occasionally heard of, though seldom bagged.

THE BLUE OR MOUNTAIN HARE.

Known also as the Snow-Hare, the White Hare,
the Varying Hare, &c.

THOUGH indigenous only to the Highlands of Scotland, this distinct species has been introduced to most parts of the Scottish Lowlands, where it now flourishes exceedingly, also to Wales, Northumberland, Yorkshire, Cheshire, and other English counties. In Scotland generally it is on the increase, and in some parts its progress is marked by a proportionate decrease in the number of brown hares—probably a matter of cycle in both cases.

Both in character and in appearance the blue hare is more nearly related to the wild rabbit than is the brown. Whence came its name it is difficult to ascertain, for it is not blue. The species is most easily distinguished from the brown hare by its ears, which are proportionately shorter and smaller, while the black tips are less distinct; the ears of the blue hare are, indeed, very much like those of the rabbit. Its limbs are shorter, more compact, and designed less for speed. Its head is more stubby and rounder, and its tail consists of a white ball of wool, like that of the rabbit. It is considerably smaller than its congener, and its coat is softer in texture, more woolly, and shorter; while the species is without the strong, cat-like whiskers of the brown hare. The undercoat is seal-blue, the hair being tipped with rabbit-brown, and in parts touched with the russet shades of the common hare, so that when the coat becomes worn a distinct bluish cast predominates, rare individuals

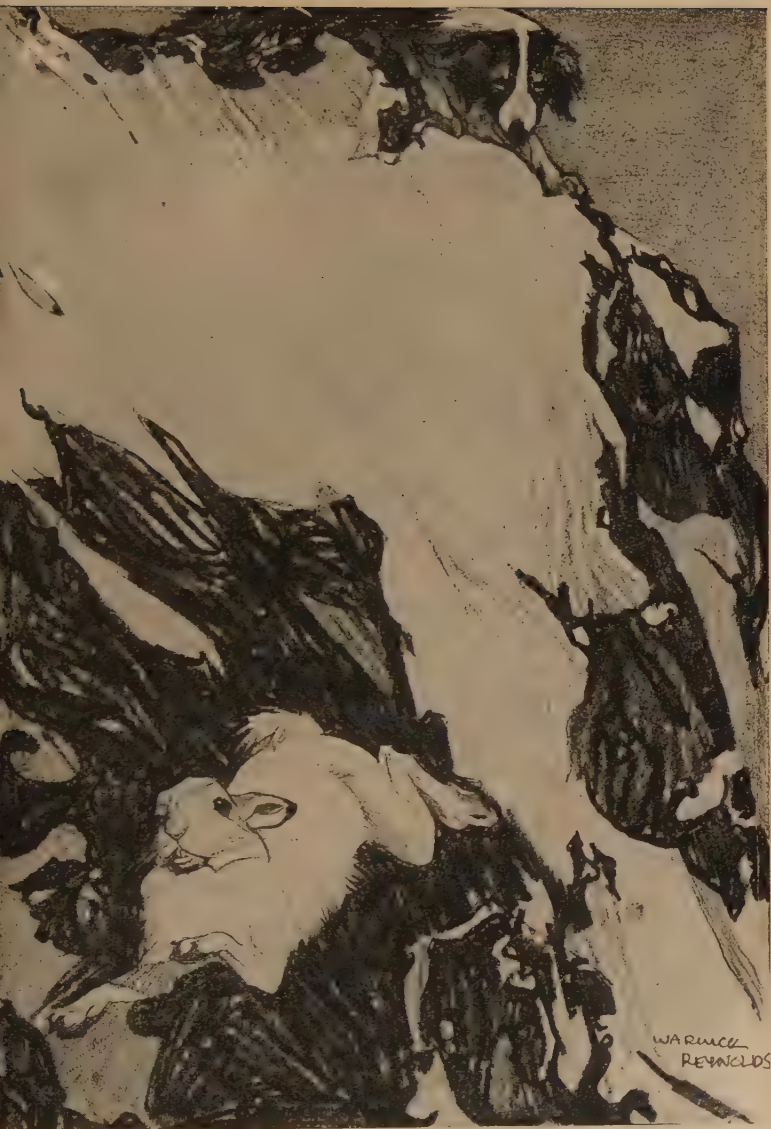
being quite blue. Normally the blue hare is no more blue than is the brown rabbit.

In December the blue hare begins to 'turn white,' in order 'to match the snow.' As a matter of fact, the 'turning' process is effected by a moult, as in the case of its near relative, the snowshoe rabbit of North America; and so far as the animal matching its winter surroundings goes, it would probably be better off if it remained brown. The change is not always complete. A certain amount of colour-pigment generally remains down the spine, and the ears always retain their black tips by way of a striking contrast. This fact would seem to support the theory that animals that are essentially creatures of the chase are coloured so as to attract, rather than evade, detection when they rise in flight. By the end of December most of the hares are in full winter coat, which they carry till March, when they quickly reassume their spring-time garb.

DISPOSITION.

The blue hare is a less cautious and a less wary animal than the brown. When disturbed it does not run right away, but generally sits up and looks curiously round after running a few paces, and this it repeats several times ere finally passing out of sight. I have known one to come limping unconcernedly up to the butts where the guns were in full blast, and to regard the sportsmen with cool inquiry! Often these hares are a great nuisance on the moors, as their stupidity is apt to distract the attention of the dogs.

Though a comparatively solitary creature, the blue hare is nevertheless more gregarious than the brown. Sometimes, during a severe winter,



THE BLUE HARE—'WHERE NONE DARE FOLLOW,'

the animals will migrate from one range to another, or from the heights to the more sheltered levels, and at such times quite a string of them may be seen moving in company, apparently enjoying each other's society by jumping and skipping together.

If the white coat of the blue hare were intended for protective purposes, it has been left by the tides of time. True that during the winter months the hills of this creature's habitat are generally white; but if there is a black spot anywhere, such as under the shelter of an overhanging rock, any white hare in the vicinity is sure to go and sit on it, vastly conspicuous from afar. Also, the hares naturally seek out any patch on the hill-side that is wind-swept of snow, so that when protection is most needed—namely, when they are at their feeding-grounds, or when basking in the daylight—they are more likely to be rendered conspicuous by their 'protective colouring' than they are to derive protection from it, especially when it is borne in mind that the eagle figures as among the most deadly of the mountain hare's foes.

RANGE.

Normally the blue hare and the brown do not mate, though their ranges considerably overlap. I have known brown hares to live the season through at an altitude of sixteen hundred feet, coming down to feed during the winter months in the valley-levels, but immediately returning to the heights when disturbed. Two thousand feet is probably the topmost altitude of the brown hare's range, except during hot summer months, when it may mount to an altitude of two thousand five

hundred feet. Above that the territory is sacred to the blue.

Blue hares, on the other hand, observe no fixed rule as to boundary. The heights are theirs undividedly, but they are quite at home in the valleys. Occasionally a very severe winter will drive all the blue hares from the heights into the sheltered lowlands, where they remain at river-level intermingling with the brown. Particularly does this occur along the Scottish coast, and it may be well into spring ere the last of the mountain residents find their way back into the mountains. In such cases mating often occurs between the brown hare of the lowland regions and the blue hare of the highland tracts; but this must be regarded as 'the exception that proves the rule.'

The blue hare is not very much valued by sportsmen. Existing as it does in the realms of nobler game, it is generally regarded as vermin. Systematic hare-drives are regularly organised in the hills in order to keep the number of blue hares within reasonable limits, and in some parts of the Highlands it is no uncommon thing for as many as a thousand hares to fall to six or seven guns during a day's drive. For the table the blue hare is regarded as inferior to the brown, but the quality of its flesh is entirely dependent on the nature of its food. A hare that has lived on heather and similar mountain vegetation is not good to eat, but one that has fed in the valleys is as good as any other hare. The snowshoe rabbit of the Canadian woods is quite unfit for human consumption during the winter months, when the animals live exclusively on the tough evergreens and the bark of sapless trees; but a spring-fed snowshoe is excellent eating.

The snow-hare has larger feet than the 'long valley' hare, to enable it the better to skim the drifts, and, needless to add, it is a much hardier and more violent animal.

THE YOUNG.

Whereas the brown hare has on an average three litters per year, the season for the mountain-hare is shorter, and it seldom, if ever, has more than two litters annually. What it loses in this way, however, it makes up in the number of young per litter. A brown hare may have three litters during the year and a total of seven young ones; a blue hare may have two with a total of eight. For, whereas two or three kits per litter is the normal number of the brown hare's brood, four or five regularly occur with the blue.

A brown hare may, certainly, have as many as eight kits per litter, but in that case she has only two litters, possibly only one litter, in the season. A blue hare may similarly have eight or nine to the litter; but even if the number mount to ten, she is still fairly sure to have her two litters. Thus, not only on account of its hardy disposition and the secluded regions it inhabits, but also because of the number of its offspring, the blue hare is better able to hold its own than is the brown; and with the increasing rarity of eagles and buzzards the reduction of its numbers is almost entirely in the hands of man.

The love-making of the blue hare occurs almost entirely by night. Very little seems to be known as concerns this chapter of the animal's existence. There is no particular reason to suppose, however, that its mating customs differ widely from those of the brown. That the same old fights

occur between the rival bucks is indicated by the tufts of hair that may frequently be seen clinging in patches to the ling-tips during the Love Moon.

FOOD.

The strong teeth of the blue hare enable it to eat almost any vegetable matter that comes its way. It is less of a dainty feeder than is the brown. I have known it to eat, or at any rate to tear asunder, the cones of coniferous trees, probably to obtain the seed, leaving the earth littered with husks, as does the common squirrel.

GENERAL CHARACTERISTICS.

The blue hare is nothing like so speedy, nor is it so resolute in flight, as is the brown. A good sheep-dog can run it down—often without any great resistance on the part of the hare.

It is seldom indeed that a brown hare takes to earth, whereas a blue hare will den up readily if hard pressed—seeking safety in a cranny among the rocks or in a disused rabbit-burrow. A Perthshire keeper showed me several short burrows or seats scratched in the peat, so shallow that one could in every case reach the end with a walking-stick. The keeper himself was most emphatic in his belief that these shafts were engineered by the hares as emergency tunnels, chiefly for shelter from birds of prey, and he assured me that the hares regularly used them as nests for their young; but this I very much doubt. There seemed to be a lack of evidence that the burrows were not the work of rabbits, taken possession of by the hares, though the keeper had probably more grounds for his beliefs than there were for my doubts.

Information bearing on this point would lead to a more complete understanding of the blue hare's habits.

WEIGHT.

The weight of the blue hare is generally between 5 and 6 lb. Where food and conditions are favourable, it attains a weight not exceeding 8 lb. Its average length from the nose to the tip of the tail is 21 inches, as compared with 23 inches in the brown.

THE RABBIT.

AS a rule, young rabbits are born in a shallow burrow known as the 'stop' or the 'stab,' often not more than a yard in depth, and so small that one would hardly think an adult rabbit could squeeze into it. Generally this hole is out in the centre of an open field, facing south for warmth. It is the rabbit's first step towards hiding her young, though her ideas in this direction are still so undeveloped that she often digs her stop within view of the whole colony, the fierce old bucks of which are as great a source of danger to her children as is the weasel or the stoat. The nest consists largely of down the mother has stripped from her own breast, intermingled with soft dry grass or moss scratched from the rocks, so that nothing warmer and softer could be imagined. While the young are still blind and helpless, the mother sometimes, but not always, covers the mouth of the hole, on leaving it, with sand and loose bedding, treading down the covering so that it resembles the features of the surrounding earth.*

Nature devotes a good deal of energy, however, to keeping the rabbit population within reasonable limits, and it is just as well that it is so; otherwise Bunny would overrun the whole universe. Often this thinning-out process begins before the babes have seen the light of day. Perhaps the mother is young and inexperienced in nest-making, and instead of digging the burrow half-

* This occurs only in the case of a 'stop;' when the young are born in a common burrow, the mother never attempts to close the entrance.—H. M. B.

way up the sloping bank, she digs it at the bottom, and the day after her infants are born there occurs a heavy thunder-storm. Water collects in the little hollow, and begins to trickle into the burrow. It may finally fill the chamber within, drowning the whole family; or it may merely damp the bedding. In the latter case three of the young ones, perhaps, contract paralysis, a fourth dies, while the remaining two, being sturdier than the rest, take no harm. When the mother comes again to feed them, she rakes out the dead one, and evidently carries it off so as not to advertise the whereabouts of her home, for I have never seen the missing member of the family lying near the nest. Yesterday there were six in the hole; to-day there are only five. The weakly one is gone, but there is no sign to indicate where.

In a few days all the young have their eyes open, and are old enough to begin to think about a vegetable diet. The first favourable night, therefore, the mother leads them out of the nursery-burrow into the moonlight, shepherding them and pushing them along, while, dazzled and bewildered, they try to get beneath her. Slow is the progress that they make; but presently, topping a ridge, they see scores of other rabbits squatting about on the moonlit plateau, some quietly feeding, and others sitting up with ears erect, doing sentry-go.

The mother-rabbit now becomes very goggle-eyed and important, stamping her hind-legs as she herds the sprawling little ones across the open. Several rabbits sit up and look at her; then, seeming to take it as a matter of course, go on with their feeding. One long-legged old gentleman (more like a hare than a rabbit), through whose ears there are many shot-holes, hops up with a

look of inquiry, circles inquisitively round once or twice, then scratches his neck with an air of indifference. His very manner seems to indicate that this old fighting buck is the king of the colony, and that one will hear more about him later on.

The mother-rabbit takes her family to the home-warren, whither most young rabbits go as soon as their nest-days are over, and here their worldly training begins. By no means are they the only young rabbits occupying the burrow, for on sunny days scores of the same age are to be seen sitting about the warren-entrances, enjoying the warmth, or shivering in the wind, between intervals of nibbling the closely cropped grass.

As the days pass they find more and more of their own food, thus becoming less and less dependent on their mother; and she, sad to relate, is very rapidly losing interest in them. Old Long-Legs, the king of the colony, now begins to make himself felt. When he has nothing else to do, or the time seems favourable—whenever, indeed, he happens to think of it—he amuses himself by chasing the youngsters through the burrows, kicking them and nipping them, and making himself an unholy terror in their lives. At first their mother sticks up for them in a half-hearted way, for they are still quite small. But soon she seems actually to forget which are her children among the many that throng the burrows; and so Long-Legs bites their ears, kicks them head over heels, chases them, and makes them squeal for mercy, till finally they run and hide at the sight of him.

NIGHT FEEDING.

Each night the young rabbits venture a little farther afield, becoming more and more interested

in the movements of their elders. At dusk an old doe sits up and begins to hop out along one of the clearly defined runways that lead from the burrows. Slowly and cautiously she goes, placing her feet just where she placed them last night and the night before, while behind her comes first one rabbit, and then another. A second old doe (a buck never leads) sets out along a second runway, leading in the opposite direction; then the move becomes a general one, almost every adult rabbit sallying forth on its nightly foray. For a minute or two the whole earth is brown with them, and one would never believe a single warren could contain so many residents. Rapidly, almost mysteriously, they melt away. In the dimness you just see a leading doe, perched like a silhouette on the break in the wall, as she pauses for a final survey ere she leads her train into the next field. She disappears, and a second black speck takes her place; then a third and a fourth are seen, like bobbing clockwork toys; till finally the gathering darkness blurs out the gap.

Not long do the rabbits stick to their runways, one branching off here and another there, so that by the time the moon is up they are scattered all over the country-side—old Long-Legs being two miles away, nibbling a cottager's cabbages at the very threshold of the village. At the home-burrow, squatting about the plateau, there remain only a sprinkling of youngsters, and a few nursing mothers keeping guard.

The youngsters join in at the tail-end of the procession ere very long. The first night out, the wall across the meadow appears to them as an insurmountable obstacle, so they nibble the grass on this side of it; the night following they try

the leap, and succeed, browsing on the other side; ere a week is up they are nibbling the grass nearly a mile away—keeping a weather-eye open for Long-Legs, who is apt to pounce furiously upon them at any time.

All along nature's weeding-out process, designed to keep their numbers in check, is going on. There comes a rainy spell, during which several of the young rabbits contract liver complaints through eating too much wet grass, and die. In the wood near there lives a wild-cat of the tame variety. She actually shares a room under a rock with several adult rabbits, and each night she steals forth along a rabbit-runway, as though she were one of the colony; yet ten minutes later she is crouching behind a wall, a sinister vision of bristling fur and gleaming eyes, waiting for the first unwary youngster that comes her way!

Then one night a whole battalion that set off northwards fails to return; and at dawn, before the respectable world is astir, a ramshackle motor-car takes a sackload of netted rabbits to a neighbouring station.

In spite of these drainages, however, the home-warren becomes more and more thickly stocked, every mother taking her young there as soon as they are old enough. And now we see the value of old Long-Legs, who in the past has been a bully and a tyrant, apparently neither useful nor ornamental. The family whose career we have so far followed are now strong and independent; but Long-Legs is still the terror of their lives, driving them out whenever he sees them, as if intent on inflicting some bodily injury. Glad to be rid of him, they turn at length to the great

wood at the mountain-foot to the west, and here, among the loose rocks, thickly overgrown with bracken and briar, they make homes for themselves, free to do what they choose.

THE OVERFLOW FOREST.

This wood is really the overflow reservoir for the home-burrow. Each year scores of young rabbits have been taken to the burrow, remaining there till old enough to take care of themselves; and then, bullied and harried by some old buck, they have gladly moved to the shelter of the wood, which, as the season proceeds, becomes thronged with the surplus stock of young rabbits. Were it not for this the home-burrow would become overcrowded, and disease, nature's never-failing remedy, would fall upon the colony.

COMMUNICATION.

Almost all animals of gregarious habits have ways of signalling danger to one another. The beaver, when alarmed, strikes the water with its tail as it dives; and this system of signalling is of value in that it conveys the warning to the members of the colony who are under water, preventing them from rising hap-hazard, while at the same time the loud report is heard by the beavers on land, admonishing them to be on the *qui vive*. The rabbit thumps the ground with his hind-legs when danger threatens, and, just like the 'smack' system employed by the beaver, this notice conveys the tidings to those below in addition to those feeding on the earth's surface.

One of the first things young rabbits learn to do is to signal danger by thumping the ground with their strong hind-legs, and it is to be feared

that in their inexperience and ignorance they misuse the alarm when they are small, thumping away at the very slightest pretext, and apparently carrying on a Morse system of telegraphy with each other in this way. Little Bill, nibbling the grass, sees a beetle fall off a twig, and at once thumps; Janie, down below, thumps in answer; then everybody else thumps, because it is the fashionable thing to do, and the very earth shakes. Having thus scared themselves, they all keep quiet for a second or two, then forget all about it till another false alarm is given.

Old rabbits, however, never thump unless they suspect serious danger, and the more suspicious they are the more vigorously they thump, the system being of endless value in their constant watchfulness for their foes. One night, for example, when most of the rabbits are away at their distant feeding-grounds, the few that remain at home at the warren—namely, the very young and the nursing mothers—hear the alarm afar off, and at once are on their guard, drawing near the mouths of the holes so that they can instantly pop underground. The alarm was possibly given by a rabbit three fields away, thumping as he ran, and on the still night the sound carries far and wide, warning the entire rabbit population of the district that danger is abroad. Similarly, one rabbit above ground sees danger approach the warren, and giving the alarm-signal as he pops down, he warns all the rest against emerging, which otherwise they might easily do, to meet danger at their very threshold.

Then rabbits have another and a far more important way of signalling danger to each other, which they do unintentionally and without sound.

There are times when the thump system would merely attract the attention of their foes—when it is better that every rabbit should steal swiftly away, as silently as possible, as they often do.

Of what value is the rabbit's white tail? One would think it merely makes him conspicuous when otherwise he might escape unseen; and this, indeed, is the case. His white tail is of no value to him personally—in fact, he would be better without it; but it is endlessly valuable to his friends, in the same way as *their* white tails are endlessly valuable to *him*.

The whole colony is at its feeding-grounds, and suddenly danger appears over the ridge. The rabbits are as yet unseen, but the faintest sound would betray their presence; so the cony nearest the danger rises and bolts swiftly and silently, and every rabbit he passes sees a bobbing white danger-signal, which means there is not a moment to be lost. And each rabbit, as he beholds it, rises and glides away, unintentionally giving the alarm to those nearest to him, so that in a few seconds it has spread north and south and down the forest-side, and the man stealing through the shadows with his gun wonders why there is not a rabbit abroad to-night, for by the time he reaches the foot of the wood the alarm has flashed ahead of him over two or three fields!

Many a time, in the dusk of evening, I have peered down into a ravine I knew to be literally full of rabbits, but not one of them could I see until, on my loosening a pebble, the whole green-sward below has instantly become dotted with bobbing white danger-signals, nothing else being visible. For the rabbit does not exhibit his white tail when feeding ordinarily; it is only when he



WILD RABBITS—'THE COLONY OF THE HUNTED.'

risers and runs that it shows up vastly visible, and he can run at full speed through the densest of undergrowth without displacing a leaf.

On their runways, rabbits always place their feet in exactly the same places, so that the track, instead of being evenly worn, like a human pathway, consists of a string of worn patches, from one to the other of which they hop. The rabbit-catcher knows this, and places his snare in such a way that it will catch the rabbit mid-leap; but a pathway of this kind is of value in that the patches become trodden hard and free of crackling leaves and twigs, so that the owners can run along it without creating undue noise.

ENEMIES.

Rabbits appear to exist simply as a natural food for other things—another reason, perhaps, for the aforesaid white tail—and there is no end to their foes. Guns, nets, snares, traps, dogs, weasels, cats, and foxes are but a few of their everyday enemies, for tens of thousands of rabbits meet their fate annually by flood-water or by disease. Those killed by man, the veritable cart-loads which go to our cities each week during autumn and winter—in fact, the whole year round—are but a dribble compared with the gigantic drain on their numbers effected by the ordinary course of nature; yet everywhere the rabbit thrives and multiplies, often to so great an extent that the most stringent measures have to be taken in order to keep its numbers in check.

In the mountains of the north the rabbits, for ages past, have made their burrows in the sandy banks of the mountain-burns; and the very fact that these banks are of sandy formation, which

so exactly suits the rabbit's burrowing habits, proves that the streams are subject to sudden torrent from the heights, the silting and sifting process of endless floods having washed away the earth and left only the insoluble sand. Each year, when these burrows are full of young rabbits, the flood-waters come down and exterminate whole colonies—the victims merely huddling in batches at the ends of their holes, making no attempt to escape ere their retreat is cut off. In fact, the abundance or scarcity of rabbits in the autumn in these regions is governed entirely by the number of spring and early summer spates. If there have been no floods, then August finds the glens and the woods alive with rabbits; but if, on the other hand, floods have been frequent, there is hardly a rabbit to be found in the country when August comes along. I have walked in May down a glen, and seen more rabbits in five minutes than one could count. Then have followed days of thunder and heavy torrent on the heights, the mountain-burn rising from a mere laughing brooklet to a roaring cataract, bearing whole trees on its troubled waters; and when, a month later, I have walked down that glen, scarcely a rabbit have I seen. The receding waters draw hundreds of the dead bodies from the burrows, bearing them away to the sea.

It is just as well that nature should impose these immense drainages. We have rid the land of many of the rabbit's natural foes—the wolf, the eagle, and so on—while foxes and weasels are everywhere kept in check, so that, if nature did not inflict these wholesale losses upon the rabbit's numbers, man would be hard put to it to keep them down.

House-rats, indirectly, are among the rabbit's

worst foes. When a rat becomes diseased he is driven out by his fellows, and forced to make his home far from them. Probably he resorts to rabbit-burrows, and rabbits, being very subject to disease of any kind, rapidly pick up the rat's ailment, which spreads from one to another throughout the whole colony—perhaps throughout the whole country-side. Most of the rabbit's fatal diseases are conveyed to him through the loathsome house-rat, and ferreters regularly discover diseased rabbits and a diseased rat occupying the same water-side burrow.

BLIND RABBITS.

Of all ways man employs of taking rabbits, probably more fall by the snare than in any other way, for its use is world-wide and universal. Every village has its rabbit-catcher; perhaps he is an old man, who goes dothering round to look to his snares long after he is too old for any active form of hunting, and great is his fund of knowledge for the select few who come to know him.

Netting is the only humane way of catching rabbits, as, in shooting, a certain percentage get away, however deadly a shot one may be, to perish miserably; while in ferreting, numbers of rabbits are injured by the ferret—if not by his teeth, then by his claws—and have to be abandoned in their burrows. I consider snaring more humane than ferreting; but the cruelty begins when old and rotten snares are used, and the rabbit gets away with the tightly drawn noose about his neck.

What fate is then in store for him? Better far that he had met the weasel on his own ground, or perished by the flood-waters when he was small. There is no getting rid of this hateful thing about

his neck, and he does not know what ails him. For days the wretched creature lingers between some sheltering cranny and a patch of green-sward, wearily dragging himself back and forth, unable to eat or to take an active part in the world of sunlight about; and in the end blindness overcomes him, if not death in some merciful form.

Sometimes, after days of torture, a rabbit gets rid of the cruel noose, and finally recovers his strength; but he is now a blind rabbit. Every colony of any size has its blind rabbits, just as long ago every herd of buffaloes on the prairie had its blind members. And just as the blind buffalo, his other senses becoming quickened, was often the first to give warning of danger to the rest of the herd, so blind rabbits, feeding with the rest of the colony, are frequently more alert and keen than any of their brothers and sisters.

I have seen a rabbit, totally blinded by the broken snare or by shot, get up and bolt like an arrow on the first approach of danger, dipping underground at the exact spot without hesitation or fault. His foes are many, however, and, thus greatly handicapped, it is merely a matter of time ere he falls to one or other of them. Once off his own runway, once turned aside from the path he knows so well, and he stumbles, falls, and is lost, finally crouching in the open without further attempt to save himself.

The rabbit is swifter than the hare when on its own ground and over a short distance, the superiority of the hare lying in its staying-powers and in its marvellous maintenance of a high average speed.

It is generally thought that the natural home of the rabbit is its burrow, that this creature belongs to the earth, and comes up only for food; but this

is not so. Like most wild creatures, rabbits love the sunlight and the air as much as we do, and seek the ground only as a place of sanctuary from their foes or from storms. A far greater number of rabbits live and have their homes above ground than dwell in burrows, their open-air houses consisting of little seats in the grass, wisely chosen to suit the weather; and here they crouch as you pass by, never stirring unless you threaten actually to tread on them.

In an alder-grove near to my house an old rabbit had his home for a long time, seeking safety in the midst of the village, and never associating with any of his kind. He dined on the fat of the land—namely, the produce of the village gardens; and though many a hairbreadth escape did he have, for long he evaded his foes. I fancy he knew every dog in the village, and how he could fool each one of them. The big sheep-dogs he could get rid of merely by running under a certain gate, which was filled in with wire-netting, and the pursuing dog, after ramming its face in the netting and probably making its nose bleed, had lost so much time that the cony was well able to get out of sight and gain the shelter of a tiny bridge under the burn, where no dog could reach him.

There was one dog, smaller and cleverer than the rest, that many times all but brought about this rabbit's destruction. This was a fox-terrier belonging to the rectory, and on seeing the cony head for the gate he would at once dart through a sheep-hole in the wall, and be ready to meet him on the other side. But eventually the rabbit hit upon the notion of diving under my summer-house, where even the terrier could not follow, and that world-wise little dog used to spend his Sundays,

when the family was at church, undermining the summer-house—quite oblivious of the fact that the cony had long ago escaped from the other side, and was now safely under the bridge.

There followed a very severe winter, and the rabbit, hard pressed for food, took to gnawing the bark from the garden trees, spoiling numbers of them, so that a price was placed upon his head. I could have shot him any day, but had not the heart to do so, since he had thrown himself on my charity, and regarded me entirely as a friend. So I saw to it that all household refuse suitable for rabbit consumption was placed near the door at his disposal, and for weeks the cony fed at the kitchen door, thriving and keeping fit during that terrible spell of snow and frost.

This rabbit had no burrow, but in the alder-grove he had many seats. It was a walled-off patch of land, overgrown with coarse grass—a tiny corner which belonged, I believe, to the church, but in which no one seemed to be interested. Here my little friend had fine-weather seats and wet-weather seats, hot-weather seats and cold-weather seats. Some were open and faced south, so as to catch all the sun; others were mere shady summer-houses facing east; while still others were deep down in the grass, secure from wet and wind.

In the end this rabbit met a sad fate. Frightened by village children one stormy April evening, he sought his old sanctuary under the bridge, and a few minutes later the burn began rapidly to rise. The rabbit evidently stuck it till he was flooded out; then, forced to swim, he took to the water. As bad luck would have it, the two sheep-dogs, which he had fooled a hundred times, were just at that moment crossing the bridge as they brought

down the cows to be milked. One of them saw the cony as he battled gamely with the current, and his mate having been given the hint, the two dogs took up their respective stations on opposite sides of the burn.

Many times the rabbit tried to land, but always a dog was waiting to snap him up. Well, he had fooled them before, and he would fool them again! This was the end, perhaps, but he would choose his own closing chapter!

We saw him fighting gamely down the centre of the stream, now disappearing bodily under the surface, then struggling up again and sweeping on with the current. The cow-boy and half-a-dozen other youths had joined the dogs, pointing and encouraging, throwing stones, sticks, anything they could lay hands on, at the little fugitive, as though he had not already difficulties enough to contend with.

Did he try to land again? Ah no!—not to be crumpled and crushed without a fight here on his own land, where a hundred times he had beaten them—singly or together—by his own fleetness and quickness of wit. Fifty yards away the burn joined the river, now bank-full with dark, racing waters that crashed and roared among the rocks.

When last I saw my little friend he was drifting rapidly—no longer struggling with a current far too strong for him, but borne this way and that like a straw in the rapids. I saw him reach the point where the burn joins the river, and there, with a mighty swish, he was gone!

A group of boys and two dripping dogs stood like statues and stared across the troubled waters, tinted now with the crimson and gold of evening as they swept on their course through the quiet

valley. Away off were the yapping of a sheep-dog and the soft low of cattle, while overhead the jack-daws and the rooks sailed clamorously home to roost.

For nearly a year he had lived at my threshold, but now I had seen him for the last time—leaving his pursuers far behind, as so often before, but heading at last into that wonderland of gold and crimson whither our vision could not follow.

METHODS OF CATCHING.

Rabbits are valuable for food, and, moreover, it is necessary for man to take a heavy toll of their numbers owing to the damage they do to the land. It is doubtful whether they can be raised profitably on grazing-land at the customary market-price, as not only do they keep the grass closely cropped, but also they kill a good deal of it, while a sheep will not eat where a rabbit has been. All these things being so, it may be as well to describe one or two of the methods employed by rabbit-catchers in their necessary work of keeping the rabbit population within reasonable limits.

One of the best rabbit-traps I know, and certainly the most humane, is the box-trap. This is usually set in the surrounding wall of a wood well peopled with rabbits. The rabbits leave the wood every evening on their way to their feeding-grounds, passing through holes in the wall wherever there is a convenient runway for them. Let us first describe the trap, when its manner of working will become obvious.

Its first essential feature is a wooden tunnel or runway which is built into the wall. This runway is provided with a false floor, which can be locked, but which, when unlocked, immediately swings

downwards when a rabbit places its weight upon it, returning to its natural position immediately the weight is removed. Directly below this false floor is the wooden box into which the deceived rabbit falls, to remain a prisoner till the owner of the trap comes along to empty the box. The whole thing must be made to work freely and silently, even though thoroughly saturated by rain.

This device is best set in position in the spring, being placed in a locality which rabbits always frequent. All spring the false floor is left locked, so that the young rabbits become accustomed to using the trap as a natural runway, care having been taken to stop up the other gaps in the wall above and below the box. By August, if all goes well, numbers of rabbits will be passing nightly over the false floor, regarding the tunnel as their own property, and at any time the owner of the trap likes he can release the false floor, and he is pretty sure of a haul.

The advantage of this trap is that, when once made, it lasts for years, providing good waterproofed wood be used ; but it must be *well* made, any noise or hitch in its working being likely to detract from its value.

NETTING.

I have had many an exciting night netting rabbits at the tail-end of the season, though for this one must know one's ground pretty well, and the runways of the rabbits that frequent it. Also a clever dog, trained to the work, is more or less necessary.

One waits till fall of darkness, by which time the rabbits have left the wood and are well away at their feeding-grounds ; then, very quietly, one

steals into the wood, selecting as the position for the nets a gap in the wall or an open gate which the rabbits are known to use on returning from their nightly wanderings. Silently then the nets are fixed out in the open opposite the gap, two of them being used, placed vertically, running parallel about eight inches apart. The net which the rabbits will first encounter is of fine mesh—too fine for a rabbit to escape through; but the other, erected behind it, is of very large mesh—so large that if used singly the rabbits could run straight through it almost unhindered. The idea is that the rabbits bolt into the first net, and, such is the force of their rush, they pass through the meshes of the second net also, carrying with them the portion of the first net in which they are enveloped. They thus become drawn up in a bag, as it were, and are quite unable to escape, even though left for some minutes. If a single net is used, many of the rabbits, encountering it, at once turn back and probably escape; so that the man in charge of the net must catch each rabbit as it comes. In so doing he turns more than half the rabbits aside, and thus spoils his chances of a good catch. Hence the advantage of the double net.

As soon as the nets are fixed, the men working them hide behind the wall in readiness; they then give the word to the dog, who has been waiting in shivering excitement for this part of the performance. The dog, knowing his work well, quietly circles round to the far side of the rabbits, where he begins to show himself, slowly quartering the ground towards the net.

The men crouching behind the wall hear the ‘thump-thump-thump!’ of an approaching outpost

of the colony. Nearer and louder it sounds, till, on the night stillness, it resembles the tread of a galloping horse. Suddenly the net shakes, and number one is fast in the meshes.

Thump-thump-thump! Pitter-pat, pitter-pat, pitter-pat! Everywhere rabbits can be heard; the whole place seems alive with them; yet, save for the shaking of the net and the occasional flash of a white tail, there is nothing to be seen. The noise becomes louder—here and there the dark outline of a cony is seen for an instant as it nips over the wall. The net veritably creaks—one thinks that the pegs must ere long be torn up by the solid weight of rabbits flooding into it; then there is a sniffing and a snorting, and close behind the rear-guard of the rabbit-colony the little spaniel heaves in view, having done his work well. The net must now be emptied without a moment's waste of time, for the rabbits are already escaping, like herrings from a salmon-net. In half-an-hour all is cleared up, and we hasten silently to the other side of the wood, or, perhaps, to the other side of the valley, to repeat the performance.

Rabbit-netting is generally regarded as a poaching, disreputable game, and so, alas! it often is; but in many parts of the country it is resorted to as one of the events of the year! In the part of Scotland where the writer lives, for example, no one troubles to shoot rabbits, there being so much nobler game to be had everywhere, with the result that in some seasons rabbits exist in thousands, a serious annoyance to farmers and foresters, eating the grass, and stripping the young trees of their bark. It is then that netting begins in earnest, and to the accompaniment of dry humour and an occasional wee dram a rollicking evening is

spent—often more remarkable for the amount of laughter it provokes than for the number of rabbits finally sent to market.

SNARES.

Rabbit-snares are generally set with the bottom of the loop the height of a man's clenched fist from the ground, the fingers one above another, and the thumb lying flat across the index-finger. (For a hare, the bottom of the loop should be placed an inch higher.)

The whole art of snaring lies in judicious selection as regards the position of the snare. The actual setting of it is merely mechanical, and can be learnt by any one, but it requires a huntsman's sixth sense to guide one in choosing the very best place for that deadly noose. At one time I used to set snares daily, and could almost state before starting out to inspect them just where rabbits would be found imprisoned; but returning to the same country after some years, I found, on trying my hand, that I had forgotten the art, or, at any rate, lost that guiding sixth sense that most hunters acquire in the special lines they follow. The old trapper knows by the general look of things where to make his sets, but he certainly could not tell you just why he knows or what it is that guides him. Constant practice, close observation, and what might be termed 'poachers' instinct' are the only guides to successful snaring of any kind, and the best way to acquire these is to be dependent on one's sets for one's next meal, as is so often the case when travelling in a pioneer country.

It is a mistake to cover the whole ground with snares; use as few as possible, placing them only on likely spots where they stand more or less

shielded from view. If the runway is closely examined, it will be found that it consists more or less of a series of patches, the rabbits taking off and landing at the same points while progressing along it—that is, treading in each other's footsteps, as already described. Therefore place the noose so that the rabbit will encounter it in mid-leap.

Do not use old wires. When a wire has been several times subjected to strain in all weathers it becomes brittle, and it is then only a matter of time before a rabbit gets away, to suffer torments from the tightly drawn noose about its neck. There is no economy in employing old snares, and their use is calculated to be abominably cruel, while it takes but a few minutes to renew the wires at regular intervals. Brass eyelets are made for the purpose, and should always be used; otherwise the wire lasts a very short time, and the noose can never be made to run so freely as is desirable.

The only hints I can give as regards choosing the position for the snare is to select the most likely-looking runway, and hide the snare in the best way possible. It will sometimes be found that rabbits are in the habit of running under a gate, having trodden the grass away below the bottom bar, and no better point could be chosen for secreting the noose. Never set a snare at the mouth of a hole or at a cranny in the wall; place it on one of the runways leading to and from the burrow along the edge of the wood, or a few feet from the cranny in the wall.

If the ground be of a consistency which does not permit it to hold the peg very firmly, it is not a bad plan to tie a branch across its centre to the top of the peg, so that, should the peg be drawn, the

branch will be dragged along crosswise, or at right angles to the path chosen by the rabbit. Thus if he tries to hole-up he is detained at the mouth; while if he keeps to the open he is not likely to travel far, the branch hitching up in the first fence or wall he encounters. At all events, the plan generally enables one to recover the snare, if not to capture the rabbit.

Very good results are often obtained by placing the snares in a wood where the runways are distinct, and where there is ample natural cover for the wire noose.

The Indian snare is by far the most humane, being designed to hoist the captured animal high into the air, out of the way of forest thieves such as cats and foxes. The noose is arranged as in an ordinary peg-snare, but instead of the cord being attached to a peg driven into the ground, it is fastened to one notched to engage with a separate ground-peg. The notched peg is attached at its other extremity to a cord holding down a sapling (or a branch) so that when the snare is sprung this sapling springs back into its natural position, hoisting the captured animal off its feet, and practically hanging it on the spot. There is not much chance of an animal escaping from a snare of this kind, as it is never able to obtain a fair purchase on the ground, and the device is used by the Indians not only for rabbits, but for foxes, bears, lynxes, &c., which would very soon gain their freedom by biting through the detaining cord were they able to get hold of it. The same plan is used for deer—even the gigantic moose and caribou—though there is no need to express an opinion on the matter of snaring such noble game in any country save in one where they are

urgently needed for food. This snare takes too much setting to be popular among rabbits, and I have never known it to be used in the British Isles.

The foregoing, though in no way intended as a guide to the 'gentle art of snaring,' may prove of interest as a side-path of woodcraft concerning which so little is known by the respectable lovers of outdoor life. Truly the man who knows best the runways of wild nature is the man whose pocket is to some extent dependent on them; though such an individual, having gained his knowledge by years of toil and observation, is naturally somewhat reluctant to part with it.

THE YOUNG.

The number of young per litter varies with the time of the year. An early spring or a late autumn litter may number only three or four, late spring and summer litters being from five to ten. The young are born blind and deaf; they begin to hear at the end of ten days, and their eyes to open about the eleventh day. These data are the result of observation among the rabbits of the Pennine heights. The young are independent of their mother when about three weeks old during a season of plenty, and almost as soon as they are self-supporting she begins to bethink herself of yet another family.

TEMPERAMENT.

Though closely allied in many ways, the rabbit and the hare are totally different from one another in character and temperament. 'Rabbit-hearted' is an expression commonly used not only by white races, but also by red and brown people, and except

in the case of a mother defending her young, this creature has no heart whatever. When pursued, it trusts to a short burst of speed taking it to the sanctuary of its burrow, and if foiled in any way and unable to find immediate shelter, it at once loses heart. I have known a rabbit, on finding its burrow closed, to begin immediately to run in foolish circles, screaming piteously, though its pursuer was nothing more fleet and formidable than a small boy, into whose hands the creature ultimately fell!

A rabbit's first dash for cover is exceedingly swift; but a hare, on the other hand, nurses and reserves its strength. It has no place of shelter to which to flee, and can look for escape only in the length of the chase. A hare starts off easily to test the speed of its pursuers; if they begin to close, it accelerates slightly; if they prove really fast, it resorts to dodging; and in this way it will foil, for minutes on end, a pair of dogs considerably swifter than itself. The twists and turns tire the dogs, rob their speed of its keenest edge, and when the hare runs straight again it is found that the pursuers can no longer gain. A hare will run till it dies; a rabbit often dies because it has not the heart to run. A rabbit is beaten as soon as it is foiled; a hare is never beaten. I have seen an exhausted hare, simply encompassed by men and dogs, settle down to dodging and manœuvring though its fate seemed inevitably sealed, till finally it triumphed over the seemingly hopeless odds, and by its own pluck and tenacity gained its freedom. On the other hand, a rabbit, losing sight of immediate shelter, becomes undecided which way to run, and either gives up all attempt at escape, or creeps into a hiding so absurdly insecure that the result is

the same. One has every respect for the hare, but neither the character nor the mentality of the brown rabbit is calculated to excite our admiration. It will return and nest time and again in the hollows of a swamp that is periodically flooded, and where death by drowning inevitably awaits its young; it has no morals to speak of, and no pluck whatever. True that it figures as an important item on the nation's bill of fare; but even here the rabbit does not pay its way, and only because it is to the poor man what the pheasant is to his employer is the existence of the creature justified.

HARDINESS.

Rabbits are not supposed to be particularly hardy animals, as they are said to be susceptible to damp, yet they seem capable of surviving under any conditions whatever. In the heights of the Scottish hills, where they live for seven months of the year amidst the driving wet of the cloud-wraiths, they flourish exceedingly. On every wind-swept island bordering the coast, though some are so bleak and rugged that practically nothing grows in the shallow soil, the rabbits fatten and multiply till periodical disease wipes them out. Among coast cliffs they are entirely at home. Here, on a dizzy shelf, the young are born; they grow up to share their burrows with the puffin and the shearwater; they become a crag-fast race of their own, thriving and multiplying till some, perforce, wander inland.

Amidst such surroundings the rabbit is, at any rate, secure from man. The peregrine, the buzzard, the weasel, and in some cases the eagle are its only foes; but so fleet and sure-footed does the cragland cony become in negotiating the perilous

shelves, so numerous are its hidings, that its feathered foes must be fleet indeed in order to catch it. The peregrine, hurtling from the blue, may meet with moderate success, but the carrion-eating buzzard and the eagle are easily circumvented, except by the very young. Thus the overflow population from a mile or two of rabbit-infested crags will keep the country inland well supplied with rabbits over a considerable area.

This animal's partiality for allotment gardens often tempts it into the suburbs of our great cities, where, for some reason unknown to any but itself, the rabbit takes up its residence, living in hourly peril, and with only the most doubtful burrow as shelter. At night-time Bunny creeps furtively forth into the cat-infested gardens, and eats an uneasy meal to the accompaniment of the clanging street-cars in the roadway just beyond. He dodges through the wooden fence at the heels of a tipsy reveller returning late to roost, and at dawn creeps for shelter under the floor of a laundry, where gray rats swarm, and human feet tramp all day perilously near his head. He is denied everything which for a rabbit makes life worth living; yet he is devoid either of the decision of purpose or of the sense of direction necessary to guide him back to happier and healthier regions! One can only echo the sentiments of the Christian nigger-boy who spent his time skinning rabbits: 'Thank God I ain't one of them!'

DESTRUCTIVENESS.

Rabbits do considerable damage on the grazing-lands which they frequent—not only by what

they eat and by so defiling the land that sheep will not graze after them, but by bringing about an entire change in the flora of their habitat. Where rabbits flourish the grass soon dies, and its place is taken by thistles, nettles, and other weeds which are very difficult to displace. The areas of useless sand-grass found in some localities are probably due to rabbits, the more useful growths that once clothed these areas having been killed off, so that the coarser, hardier growths finally took possession. On sandy hillsides the rabbits do considerable damage by casting up vast mounds of unfertile earth, and thus burying the fertile surface. The steep hillsides of the Tweed valley furnish examples of this on an extensive scale. Passing along this valley, particularly in the vicinity of Peebles, one is struck by the patched and mottled appearances of the hillsides, every second pasture on the steep slopes being dotted with yellow patches which catch the sunlight and stand out conspicuously against the background of green.

Farmers do not generally realise the full extent of the damage done by rabbits on their property. It is customary to let the shooting, if in the farmer's own hands, and the rent received for it is supposed to compensate for the damage done. On the many rabbit-shoots I myself have rented, however, it would, on almost every occasion, have been possible, had one cared to work, to pay the rent by selling the rabbits killed at sevenpence per head. Those rabbits cost the farmer more than sevenpence each to rear, and by letting the shooting he was by no means assured that the work of extermination would be thoroughly done. I do not mean to infer that farmers would be well advised to increase the

rent of their rabbit-shooting; on the contrary, from the tenant's point of view, it is seldom worth what is paid for it, and the best arrangement is for the farmer to come to an agreement with the tenant that, after a certain date, measures will be taken systematically to reduce the rabbit population—preferably by the employment of a professional rabbit-catcher. The man who is simply out for sport does not kill down the rabbits as they should be killed, and by February at the latest traps and snares should have been brought to bear, and should be kept in operation till they no longer yield results. The doe-rabbit killed in February could profitably be bought at ten times her market-price by the farmer on whose land she was killed, and this is a point he should bear in mind ere he decides to dispense with the rabbit-catcher's services.

LENGTH OF LIFE.

So few wild rabbits die by the kindly hand of Time that it is difficult to arrive at their natural length of life. In an enclosed park in the West Riding a rabbit, distinguishable from his fellows by a white ruff about his neck, was seen by the family at breakfast almost every morning for nine consecutive years. He was born about the same time as the eldest son of the house, and, curiously enough, he died, judging from his disappearance, on the same night as the child's grandpa died! His name went down with the family traditions.

This rabbit lived a hedged-in and protected life in the precincts of a city, and under such conditions he might, indeed, have lived to see his fifteenth year. How long a wild rabbit lives depends upon the speed at which it lives. Safe

from its foes, passing its days in peaceful security, it would probably live many years longer than if it were eternally but unsuccessfully chivied by stoats and lurchers. Since normally wild rabbits live less strenuous lives than hares, they live proportionately longer. I should set down the average life of the normal wild rabbit at eight years; senile decay generally sets in rapidly at the end of the ninth year, and few of them live to reach eleven.

WEIGHT.

The weight of flourishing adults is generally between 3 and $3\frac{1}{2}$ lb. The first figure may be taken as the average; $3\frac{1}{2}$ lb. is a good market rabbit, though during favourable seasons 4 lb. is not an uncommon weight in some localities. Contrary to what obtains among hares, the bucks are generally the heavier.

THE SQUIRREL.

WHERE squirrels exist, the woods always seem the richer for their presence ; but, alas ! this is generally the opinion of the passer-by rather than of the owner of the woods. In the hardwood-forests of the south of England timber-growers do not seem to be very much troubled by the activities of squirrels, but in the fir-forests of the north this beautiful little creature is often guilty of severely damaging young trees, stripping the saplings of their bark and their tender shoots so ruthlessly that it may kill every tree in a planting if left undisturbed to its work. The result is that in some localities the destruction of the squirrel has been so energetically pursued as considerably to reduce its numbers, if not entirely to exterminate it ; while in other districts, where the forest-owners have suffered to a less extent, squirrels have been left to multiply. The variation in treatment to which it is subjected chiefly accounts for the uneven distribution of this rodent.

Though never idle save during exceptionally cold snaps, squirrels are seen at their best when the leaves begin to fall. At this season the animal spends much of its time on the ground, with the result that our attention is drawn to it by the rustling in the leaves ; and as the squirrel climbs into the branches he is more visible than in summer, when the trees afford his little russet form the shelter of their foliage.

Though naturally highly inquisitive, squirrels can be very coy when so disposed. Recently I saw three of them seek the shelter of a solitary

white-thorn bush on our approach. There was no other cover near, the bush standing alone in a field; yet as we passed within a few feet of it nothing could be seen of the squirrels, so cleverly had they made the best of what little cover the leafless twigs afforded. In the woods, the squirrels desirous of avoiding detection manage always to place the trunk of a tree or a good stout branch between themselves and the passer-by, clinging to the bark and edging in jerky movements this way and that; and so still do they keep on thinking themselves invisible that it takes a keen eye to pick them out. The result is that, travelling through woods where they abound, one may catch only an occasional glimpse of a fleeing red coat, the squirrel generally disappearing as soon as he has gained the branches. If not molested, however, they become very tame, and the gray squirrels in the park at Exeter can be seen any day taking food from the hands of children.

STORAGE.

The squirrel is notoriously a food-hoarder, and quite early in the autumn the storage fever seems to take possession of him. At this season each squirrel has his individual range, seldom travelling much more than a hundred yards from some central point. This point is possibly a hollow tree, deep down in which the little tree-dweller has his home, consisting of bed and larder—chiefly larder. Here, quite early in the season, the squirrel begins to lay up his winter store, but it is to be feared he is not very methodical about it, busily storing one day, and eating a good deal of what he has stored the next. He opens nuts by gnawing the small



THE SQUIRREL—'THE FOOD-HOARDER.'

ends, then splitting the shells vertically, just as one would do with a penknife. The squirrel never wastes time and energy over cracking bad nuts, evidently being able to tell by their weight whether the kernel is sound ; and the apparently sound nuts often found in a squirrel's abandoned larder will, if opened, invariably prove to be empty. Among rocks, these abandoned larders are often seen to be half-full of empty nuts.

Autumn being a time of plenty for the squirrel, there is no particular haste as regards the winter store, and having laid aside a goodly stock in a hollow tree or a cranny among the rocks, the little animal now resorts to a curious practice, which for a long time puzzled me. It is October, and he is to be seen climbing nimbly into the branches of nut-bearing trees, from which, at regular intervals, he descends to earth, runs off to the forest-edge, and scratches a hole in some soft piece of ground, where he buries his find. This done, he ascends the tree again ; then duly buries another nut in another place ; and so on time after time for so long as the sunshine lasts. In the Bolton Abbey woods I have watched squirrels thus employed during the greater part of the day, generally using for their burial-ground the exposed earth of a land-slide or some other treeless patch, but I have never been able to find the nuts thus buried.

This is all part of the storage system. The squirrel cannot, of course, remember the exact whereabouts of all his hastily made *caches*, numbering, as they do, many hundreds, but he retains a hazy notion that in such and such a bank nuts are buried, to be found by the diligent searcher. Meantime the food is safe, as nuts are best preserved in damp ground, and should keen frosts

come it is as secure there as it could be anywhere. But the wisdom of Nature's whole scheme is this—that should the squirrel not find or not require the nuts he has buried thus, they duly grow into trees, enriching and extending the forests with the food-bearing growths on which the squirrel is dependent. The squirrel is, then, a natural planter of forests, selecting for his planting a patch of soft, open ground where forgotten nuts would be most likely to spring into trees, obtaining ample sunshine, and unhampered by the growth of other timber. Thus it may be said that just as the squirrel is largely dependent upon oak, beech, and hazel, so these trees, in the virgin state of nature, are largely dependent upon the squirrel.

During the autumn harvest one squirrel very much objects to a rival red-coated harvester trespassing upon his home-range, chasing any visitor from tree to tree should the interloper venture within the prescribed boundary of his territory (see MATING). The nut season, however, is all too brief, and having laid in his store, the squirrel, providing the weather remains mild, divides his time between the berry-bearing bushes and the moist leaves which carpet the earth, scratching about among the latter for covered nuts, 'mushrooms,' and the bulbs of woodland plants. There is nothing like wet leaves for protecting the earth from frost, the first keen night freezing the topmost layer, and forming, as it were, a roof which the frosts that follow do not easily penetrate; so that, protected by the natural warmth of the earth under a coating of frozen leaves, the food of so many wild-folk is preserved throughout the keenest weather.

In dealing with the red squirrel of Canada, Seton

makes an interesting observation with regard to the storage of fungi. Our own red squirrel feeds to a considerable extent on the poisonous-looking mushrooms that grow in sheltered woods, and it is probable that Seton's observations are applicable to the squirrels of this country also. He says: * 'The second food-supply in winter is mushrooms, chiefly of the genus *Russula*. If these were to be stored in the same way as the other provisions, they would doubtless rot long before they could be of service. The squirrel stores them in the only available way—that is, in the forked branches of the trees. Here they are safe from the snow that would bury them, from the deer and field-mouse that would steal them, and instead of rotting, they dry up and remain in good order until needed.'

It would certainly seem that squirrels exercise a good deal of judgment in the selection of suitable storage-quarters; and just as rooks are known to store walnuts in manure in order that they may not be frozen in, so the autumn campaign of the squirrel is conducted with intelligent regard for the changed conditions which come with winter.

HIBERNATION.

If a cold snap comes early, the squirrel each day travels a less distance from its den, rising a little later each morning, and retiring a little earlier. Finally, if the cold snap holds, he emerges for only an hour or so at midday, and one morning he does not emerge at all. There he is, in his cosy bed, dry and warm, with a goodly supply of food at hand, sleeping his winter sleep, of which we hear so much and see so little.

* *Life Histories of Northern Animals.*

His winter sleep? It is to be feared he does not take it very seriously! Even in midwinter, should the morning bring bright sunshine, he is pursuing his way in his oddly jerky manner, looking very drowsy when first he emerges, but soon wakening up to take a proper interest in things. It is now that, to save depleting his larder, the contents of which he may need when keener weather prevents his travelling far, he turns his attention to the nuts buried in the leafy banks, dodging hither and thither between the patches of pale winter sunshine in search of his hidden treasures. Snow falls during the night, and when to-morrow brings a biting wind, he is not to be seen. Winter and hunger settle upon the land, but the squirrel sees nothing of these things. He is a creature of the sunshine, and Nature in her harsher moods knows him not. One day an old lank fox puts his nose into a chink at the root of the hollow tree and smells squirrel. He sniffs and blows loudly, thinking of the feast so near at hand, and trying, by sheer wind-pressure, it would seem, to blow the squirrel out of the hole in the trunk high above; but Reynard knows he will have to content himself with the smell. Perhaps the squirrel pops his nose from the nook above, lets fly a volley of scornful abuse, and retires to his nest within, leaving the world without to the twittering of the blue-tits and the restless wanderings of Reynard.

In the south of England squirrels do not hibernate unless the winter be of exceptional severity, and it is only in Scotland and the northern counties of England that storage is carried out in the systematic manner described. The hibernating abode is usually a hollow tree, though in Scotland I have known squirrels to den up among rocks

overshadowed by trees, or in a ruined wall. When the nest is so placed, there is always a branch handy on to which the animal can spring should it be disturbed.

DISPOSITION.

In disposition the squirrel is erratic, impulsive, and prettily impudent. In most of the forests of Canada squirrels team in countless thousands, and from sunrise till sunset their scolding chatter greets the woodsman. On Nighthawk Lake, Northern Ontario, I caught one in the act of swimming a bay at least a hundred yards from the nearest land. Probably he had been chased by a fisher* or a pine-marten, and had taken to the water as a last resort, for no squirrel in its senses would voluntarily have essayed such a crossing. When I held out a paddle, the little creature at once took hold, and allowed me to deposit him inside the canoe, where he leapt from thwart to thwart, finally flattening himself against the gunwale, imagining himself entirely invisible. There he remained till we bumped the shore, where he leapt for the timber, and sat just out of reach, hurling abuse.

On another occasion I witnessed an amusing incident in which a red squirrel figured prominently. A number of boys surprised the little fellow in the centre of an open road, whereupon the squirrel scrambled for the nearest tree. But the tree, alas! turned out to be a telegraph-post, not more than twelve feet in height, and there he clung, too frightened to descend, unable to climb higher, while the party of juvenile warriors gathered round with shouts of triumph. The squirrel, quite panic-stricken, and probably not knowing what he did, leapt straight and true for the ringleader of the

* See p. 78.

gang, fixing his teeth in the extreme tip of the boy's nose, and there he hung for a second before another leap took him to the safety of the woods. If ever there existed a band of demoralised and entirely routed warriors, it was that little band of backwoods urchins; and as they escorted their blubbering and wounded leader homewards, one of them summed up the general verdict in the sentence, 'Squirrels and such-like varmints ain't worth meddlin' with!'

NESTING.

Squirrels usually nest in trees, very often selecting a high holly-bush, and placing their abode in a fork of the main stem twelve or sixteen feet from the ground. The nest is globular, having a side-entrance, like the nest of a dipper. The entrance is often difficult to find, owing to the fact that it is overhung with a brow of fabric, which prevents rain and wind from driving in. The nest is called the 'dray' when built thus, and many country dwellers have doubtless wondered why it is that not one in fifty of these nests is occupied. There are several reasons, the chief being that a dray made and used one season remains in the tree for several years ere finally it drops to bits. Another reason is that squirrels, like wrens, make several nests ere finally one is constructed that meets their requirements; so, what with old nests and dummy nests, one may search far ere one ultimately finds the builder at home. Nevertheless, these structures are used for nursery purposes, the young occupying them till the space proves insufficient. At other times the squirrel builds its home inside a hollow tree, or even among rocks, where, of course, it is quite invisible and difficult to locate.

The materials chosen for nest construction are decided by the materials at hand. One pair of squirrels I had under observation in Bolton Abbey woods spent much of their time rooting about at the foot of the undermined river-bank, which was draped with a trailing tapestry of roots. These two built their nest of closely woven fibrous roots, and a very neat nest they made. Another pair in the same woods built near the boundary wall, just over which were two hay-ricks, and hay was the material chosen. It made a very conspicuous and straggling structure, which soon went to bits, so I conclude they were an inexperienced and newly married couple.

As a rule the nest is composed of leaves, moss, and twigs, and I have known green pine-needles and other unsuitable rubbish to be interwoven with it.

MATING.

It seems to be generally agreed that the squirrel has one wife only, and sticks to her for life. My own observations incline me to the view that this is not uniformly the case. Nor am I by any means convinced that the alliance always holds good through the winter. For every pair of squirrels one sees together at that season, one sees a dozen living solitary lives, each having its own group of trees, in which it permits no other squirrel to trespass. One squirrel, thus observed, did to my knowledge rear a family the previous summer, but was never seen either with his mate or with his young after August; he was distinguished by the possession of an almost white tail. On the other hand, in New Galloway, in Scotland, I repeatedly observed pairs wintering together.

Never was one seen without the other ; never were they more than a few paces apart ; often they were to be seen on cold days cuddling each other for warmth. I noticed also that there the young remained with the parents till far into winter. It may be that mutual warmth in the more rigorous climate has something to do with the matter !

THE YOUNG.

Only one litter is born per year, the young numbering from three to six ; they appear in May and June, and are not able to fend for themselves till at least five weeks old. They remain with their parents for fully eight weeks, or, as already described, the family may remain united till winter. Certainly the father has nothing to do with the offspring till they are old enough to fend for themselves. He may then, in company with his wife, be seen piloting the brood from tree to tree, for squirrels have their runways in the branches, just as the beasts of the earth have their beaten tracks. In passing from tree to tree a squirrel recognises certain bridges, by which it invariably travels in going from one frequented feeding-place to another. In New Galloway, a squirrel used each morning to come from a beech-wood to feed in a fir-tree in one corner of my garden, and I noticed particularly that it came each day by the same beaten track. Dropping from a silver birch at the edge of the wood, it alighted on the moss-covered wall-top, lightly leapt a gap, pranced across the road, bounded on to a certain moss-covered rock, and thence into the tree. The young squirrels are taught by their parents all these leaps and crossings, and so by a thorough familiarity of their home-

range they are often able to circumvent their foes.

ENEMIES.

Most of the squirrel's foremost enemies, the pine-marten and the larger birds of prey, are gone. One nest which I knew to contain young was laid waste by a stoat or a weasel; it was in a low holly-bush, and the mother haunted the scene of the tragedy for some days. Rats rank among the enemies of all rodents in this country, though to a less extent in the case of the squirrel than in most others. Owls hold no important place among the squirrel's foes, one being strictly nocturnal, and the other strictly diurnal. In the Kells Hills I one day saw a merlin dragging something almost too heavy for it to carry. The little falcon was only just able to raise its load from the ground, flying low for a matter of fifty paces, then again alighting, as merlins commonly do. I pursued with such haste that after several short flights the hawk was compelled to abandon its quarry, which proved to be a full-grown squirrel.

Among the animal's enemies may also be included the pike.

Motoring between Peebles and Edinburgh on 2nd February 1920, I was approaching a fir-plantation, when I noticed something carried by the gale at an oblique angle across the roadway. It struck the edge of the road with considerable force and rebounded, for a half hurricane was blowing at the time. The article was about two hundred yards ahead of me, and I took it to be a portion of a pine-limb. On coming up, however, I found it to be a squirrel!

The poor creature had evidently been killed instantly by its impact with the road, as it must have been blown from branches at least thirty feet above.

Whether many squirrels meet their fate in this way during high winds I am unable to say, but it is possible that the dead specimens one so often finds in the woods very early in the spring are victims to the heavy winds which generally prevail at that season.

CLIMBING.

A gentleman with whom I was acquainted in Yorkshire did all that he could to induce the squirrels to take up their abode in the grounds of his home. Cosy nesting-boxes were put up for them; there were abundant nut-groves and fruit-bearing trees; yet the squirrels, though plentiful in the surrounding country, for some reason would not attach themselves to this particular estate. One comes across a similar state of affairs in the bush localities of Canada, where one valley is teeming with squirrel life, while in the next valley across the watershed, where the conditions appear to be exactly the same, one will not see a single squirrel in a long day's trek.

Though seeming so much at home in the branches, the squirrel is not an expert climber as the tree-dwellers go. Compared with the death-darting pine-marten it is a sluggard. It does not habitually descend the trunk head downwards at full speed, and this is the test of the pukka climbing animals. Yet the squirrel is truly a creature of the trees in so far that, if caught away from their friendly shelter, it becomes utterly

demoralised and dazed with fear, turning and showing fight before even making a proper attempt to escape. Quite recently I found a squirrel out on an open moor, several hundred yards from the nearest pine-fringe, though goodness knows what he was doing there! The heather was deep enough for him to escape unseen, yet he persisted in running round in circles, uttering the most unspeakable abuse, and making himself entirely absurd. His behaviour was reminiscent of that of a foolish little musk-rat who, caught far from his beloved pond, turned and held up a team of horses with its lusty band of lumbermen till some one ended the performance by throwing a coat over him!

USE OF TAIL.

Squirrels are particularly partial to forest-glades through which a stream winds its course, for here the unimpeded sunlight falls with its full warmth to the ripening of the water-side harvest. It is no uncommon thing for one of them to fall into the water; in fact, the observer is tempted to think that they sometimes do this purposely in hot weather, for, as already shown, the squirrel is a moderately good swimmer. He thinks nothing of crossing a burn by leaping from stone to stone, plunging in should there be no stone conveniently placed. When in the water the squirrel has an odd habit of jerking its tail at intervals, and this motion is apt to attract the attention of large fish lurking in the depths. Pike or large trout will snap at anything, and, as Seton points out, many a squirrel has lost its tail while swimming owing to the attack of these fresh-water sharks. The skin strips away from the bone at

the slightest pressure, as does that of many rodents, and though the accident seems to occasion the creature little discomfort at the time, its fate is most assuredly sealed.

A squirrel that has lost its tail will not live; in fact, no greater calamity could befall this little denizen of the branches. It will be noticed that when a squirrel runs along the top of a wall it carries its tail straight out behind, as it does when on the ground; and should it desire to leap a gap in the wall its tail is given a downward sweep as it takes off, thereby giving an additional impulse to the leap. When climbing upwards a squirrel carries its tail vertically over its back, so that the impulse can now be given in an upward direction. And so, in every attitude Mr Squirrel assumes, his tail is so carried that it can be utilised to assist in the direction in which assistance is needed; and similarly, in alighting, he breaks the force of his landing by a sweep of this ornamental extremity. It is his rudder and his parachute; and what happens should he lose this important member, and be left only with the naked stump? All through his life he has allowed for that little extra impulse his tail gave, and for the steadying effect it had when leaping through space; but now he is hopelessly at sea. Here he falls short, failing to catch the branch at which he aimed, and tumbles heavily to earth; there he makes a leap for the vertical trunk, and, unable to jerk his body upwards at the last moment, he crashes head-foremost into the tree, falling dazed and bewildered to earth. It is not the first fall nor the second that kills him, but the many falls that come each day, till in the end, unable to realise what misfortune is his, he

creeps away to some sacred cranny among the kindly shadows.

CRIMINAL SQUIRRELS.

It is to be feared that squirrels do not all live exclusively on nuts and fruits, for there are individual squirrels that acquire a criminal liking for flesh, and when one squirrel in a certain district takes to destroying the eggs and the young of wood-pigeons and song-birds, the rest of the squirrel community of that locality very soon follow the lead. I do not think that all squirrels are given to the ruthless massacre of defenceless fledglings, but the squirrel that has done it once very soon does it again, and teaches his mate to do it. So the bad habit becomes an epidemic, and soon it is a matter either of exterminating the squirrels or of the squirrels exterminating the song-birds.

When last I was in Toronto there was a great outcry against the squirrels in the city parks, it being said on all sides that unless the little murderers were killed off, Toronto would lose its song-birds. In Britain one hears few complaints of this kind against the little tree-dweller, and only once in this country have I come across an example of depredations of this kind. In a gentleman's garden in Kirkcudbrightshire it was found one spring that the song-birds' nests in the shrubbery were being robbed, and naturally suspicion fell upon the cat. The feline was, therefore, kept caged: but still the robbing of nests continued. Then one day a squirrel was caught red-handed, calmly chewing away at an unfortunate fledgling that it had not even troubled to kill. The squirrel was shot on the spot, and from that day the destruction ceased, though many

other squirrels occupied the grounds. This proved conclusively, then, that one little criminal was responsible for all the damage, and that the bad habit he had acquired was *not* shared by the squirrel community in general. One squirrel with which I became well acquainted took up the uncommon pursuit of fishing. This animal lived alone in the Knocknarling valley, near the town of New Galloway, one of those quiet spots Nature provides for her peace-loving kindred. It was a favourite haunt of the roe-deer, and whenever I went that way, keeping a weather-eye open, and moving silently through the trees, I invariably saw their graceful forms floating ahead through the undergrowth.

The squirrel was invariably to be seen near the same bend in the burn, and several times I noticed him paddling about in the shallow water as though searching for pebbles. This struck me as curious, and, watching closely, one day I saw him take what looked like a nut from the water, crack it in his jaws, and proceed to consume its contents. This done, he continued to paddle, keeping his tail high and dry; but, finding nothing further, he ran down-stream, and there repeated the performance.

Going quietly up, I discovered that the objects of the squirrel's quest were a species of small water-snail or fresh-water winkle! Here is an example of a squirrel developing very unusual individual tastes, turning from the trees to the widely different pastime of 'angling'!

In America I have known the squirrels to become as multifarious in their tastes as the bears, visiting the lake-shores in search of dead fish or other carrion washed up on the margin, or gorging

upon the scum of dead May-flies, which hatch out in such countless millions on many of these waters.

But whatever the squirrel may be abroad, whatever isolated examples we may find of individual criminals at home, this creature is a joy to behold, an ornament to our suburban parks, where old city clerks, pausing on their way home for a wistful glimpse of the country, are reminded of the quiet woods by a vision of his russet coat among the branches.

SIZE, AND LENGTH OF LIFE.

Taking the average of ten dead specimens I have measured, I arrive at the following dimensions: From tip of nose to root of tail, 8·3 inches; length of tail, 6·8 inches. This appears to be about the average.

I have no data bearing on the length of life of the squirrel, but such information as exists on the subject indicates that a squirrel has passed the zenith of its powers at eight years, and that it seldom lives to see ten.

COAT.

The coat seems to fade considerably as summer advances, particularly the tail. The winter coat comes in November—earlier in the Highlands. By the end of November the ear-tassels are fully formed. The spring coat is assumed not earlier than May in the north of England and in Scotland, to which area my close observations are limited.

[The fisher, called also the pekan and the wood-shock, and (by American fur-hunters) the black fox, is an American species of marten. It is the largest of the marten family.]

QUESTIONS AND EXERCISES.

THE BROWN HARE.

1. After reading this chapter, and studying with care the picture on page 5, give an account of the size, the weight, and the appearance of the brown hare.

2. What is there peculiar about (*a*) the eyes, (*b*) the legs, of the brown hare? What advantages and disadvantages follow as the results of these peculiarities?

3. Name some of the hare's enemies. Give the reasons which the author puts forward why the hare is not extinct in this country.

4. Tell what you know of the young of the brown hare.

5. Which, do you think, has the better chance of living to see its second birthday, a baby hare, or a baby fox? Give reasons for your answer.

6. What are we told in this book about the disposition of the hare, and how this disposition is shown?

7. Narrate as fully as you can the instance which the writer gives of the staying powers of the hare.

THE BLUE OR MOUNTAIN HARE.

1. In what parts of Great Britain is this animal now found? Which part of the country was its original home?

2. How does the mountain hare differ from the brown hare in (*a*) its appearance and structure; (*b*) its disposition?

3. Write what you know about the mountain hare's change of colour. Discuss the advantages and the disadvantages, from the points of view of both the hare and its hunters, of this change of colour.

4. What has the writer of this book to say about the mountain hare as an article of food?

THE RABBIT.

1. Describe as fully as you can (1) the home in which most young rabbits are born; (2) the home to which they go after a short time.

2. What do rabbits eat? When do they usually feed?

3. State as many as you know of the ways in which

the rabbit population is kept down. Explain why it is necessary that it should be kept down.

4. Narrate the steps leading up to the planting of a new rabbit colony.

5. How do rabbits warn each other of danger? Discuss the advantages and the disadvantages of these warnings from every point of view that occurs to you.

6. Give a description of what the author of this book considers one of the best rabbit-traps, and an account of how it is used.

7. Imagine yourself as having been one of a party that went out one night netting rabbits. Write a letter to an intimate friend telling of your experiences.

8. Name the various ways in which rabbits do harm to the land.

9. Compare the disposition of the rabbit with that of the hare.

THE SQUIRREL.

1. State fully the reasons put forward by the author for the squirrel being more plentiful in some districts than in others.

2. Describe the appearance of the squirrel, basing your description on what you have read in this book, and on the picture on page 63.

3. Give an account of the nesting habits of the squirrel.

4. What does the squirrel eat? At what time of the year does it become a 'food-hoarder'? Why does it hoard food? How does it hoard it?

5. On page 65 we read, 'Thus it may be said that just as the squirrel is largely dependent upon oak, beech, and hazel, so these trees . . . are largely dependent upon the squirrel.' Give the meaning of this statement in your own words, and show that it is true.

6. Write what you know about the hibernation of the squirrel.

7. What evidence does this author bring forward to show that a pair of squirrels do not always remain together during the winter?

8. Explain in what ways its tail is of use to the squirrel, and the effects its loss has upon the animal.



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